Blueshift – June 2013

“Go outside and look up!”, Part 3 of our interview with Dr. Phil Plait.

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Maggie Masetti: Welcome to Blueshift, brought to you from NASA's Goddard Space Flight Center. I'm Maggie Masetti.

In Part 2 of our interview with the “Bad Astronomer,” Phil Plait, he talked to us about the “profound and supreme joy” he got from showing people how science, and the universe, works. In this podcast episode, we have Part 3 of our interview, wherein we chat with Phil about misconceptions and how to combat them. Spoiler: one thing you can do is just go outside and look up at the sky!

Sara: Specifically what are some of the space related misconceptions that you’ve covered?

Phil: What haven’t I covered? This is like, “okay, fire hose time!” and try to pull a particular drop out of this. Asteroids are a big topic right now. We’re looking at asteroids in the news all the time because people are scared about asteroid impacts, of course, and movies have really played that up. So every time an asteroid comes by the Earth they’re in the news and there are so many misconceptions about asteroids mostly springing from the fact that human beings have a miserable sense of scale. And we look around and see this gigantic planet and we look up at the sky and think, “we must be a huge target!” and it turns out we’re really not. We are a target but it’s not like these things are dinosaur killers raining down from the sky every 5 years. So I try to explain that the asteroid belt in The Empire Strikes Back is not realistically depicted. You don’t have to duck your head every time you fly through one and, in fact, it’s very sparsely populated with rocks. And if we do see one coming our way it’s not all that easy to just lob a nuke at it or Bruce Willis and blow it up. Things like that. And even saying we don’t know a whole lot about asteroids. We’ve only visited a handful of them. We certainly know a huge amount more than we did even twenty years ago but there’s still a lot to learn and we’ve only got a few close up pictures and here’s how we think they formed and they’re very similar to comets. And again even by the way I’m describing it you can see how you start with the misconceptions and sort of very slowly and subtly - and sometimes not so subtly - morph it into a discussion of the real science of this thing and I love that. I love being able to get people hooked on that.

Sara: Well and with the way people learn it’s less effective to just say, “you’re wrong” than it is to show them what’s right and to take them through the real “how things work.”

Phil: Right. And maddeningly research has shown that if you debunk a misconception you typically wind up reinforcing it. You know, a year later people don't remember that you debunked it, they just remember that you talked about it and since they already have it in their head it kind of reinforces it. It really it sort of head-desk-banging-ly irritating but if you don't do it at all then there's no hope at all. So I'm still trying to work a way around that but I feel that even just getting it out there is helping a little bit because not everybody gets it reinforced. Some people figure it out. And again, you know what, if you're encouraging people to think about it that's not necessarily a bad thing.

Sara: I think that's certainly how we feel about it and when we hear that educational research we think, "well, we'll take this under advisement but we can't stop talking about it in case people still get it wrong."

Phil: Yeah, what do you do? I don't want to do something that I know is wrong and continue to do it but on the other hand I know if I stop I'm not helping at all.

Sara: Do you ever hear some of the things that people believe and just think, "wooow..."?

Phil: Oh absolutely! I get stuff sent to me all the time and some of it is just wrong, some of it is sort of crack-pottery, and some of it is illucid. There's this guy who's making videos saying planets and stars are alive and I'm not really sure exactly what he's trying to say. But I think he's tying it into the Mayan philosophy and the "apocalypse" in December which is nonsense. But stuff like that you just kind of look at and go, "yeah I'm not going to touch that." That's clearly a waste of my time to go in there and try to figure that out. But there's crack-pottery too, the kind of stuff where... The stuff that makes me crazy is the stuff that's doomsday material. An asteroid... last year? YU55 and TU54 [TU24 actual] I think, I may be getting the numbers wrong, but every now and again it's easy to find these things on youtube if you look for asteroid impact or asteroid whatever. And there were these people who were saying these asteroids are going to hit the Earth and then I come out with a blog post saying, "no, they're not going to get within 3 lunar distances from the Earth." And then they start talking about, "well these things are going to connect with us magnetically or electromagnetically and cause earthquakes and dadadadada... And the thing is, of course, that's utter bologna. Whether these guys think they're telling the truth or not, whether they honestly believe that or not it's still wrong. And they're scaring people. So I'll go out and I made a long video talking about why one of these asteroids is not going to do this and the problem with that is you debunk it and you get people thanking you or saying you're part of the system and they're paying you to lie or blah blah blah. And then three months later the next asteroid comes back and it all starts again. There's no memory. And it's amazing to me that with this almost unerasable

footprint of the internet where everything you say now is basically recorded. And you make a video that says the Earth is going to be destroyed by an asteroid and then you're wrong and you do that three more times and the fifth time you do it people will still listen. They don't just go back and look this stuff up and go, "huh, this guy's been wrong a lot, maybe he's full of it." And that's just another thing that you just have to say, "well, I'm gonna keep fighting, I'm gonna keep doing it."

Sara: There are also the things that you can kind of see how people believe them. One of the ones I've been sort of mystified by because it seems really obvious is that people think the moon is only up at night.

Phil: Sure.

Sara: And when you hear things like that you think, "well these are genuine... This is logic or pseudo-logic that they're trying to employ based on their own observations and what they think they remember from school. What about those? What do you do sometimes with ones they almost seem too little worry about but they might be pretty pervasive?

Phil: I get asked a lot, "what are the two things you wish you could change in the public's mind about science or astronomy or anything like that?" I say I wish, like I said before, that we had a better sense of scale. That people understood how big space is and how far away things are. And I also wish that I could just get everybody to go outside and look up. The second one is so simple. If you can see, just go outside and look up, and people don't do that and we hear all the time about people who reported Venus as a UFO. I've heard of the moon being reported as a UFO! Usually alcohol is involved. People who don't think you can see man-made satellites, they just don't know. And the other thing that kills me is every time somebody sees a halo around the Sun with "sun dogs" which are those beautiful tear drop shaped flares of light on either side of Sun. You get those a lot in winter. It's caused by ice crystals refracting, acting like a prism, spreading out the colors of the sunlight. Every year there's a report of that and the reporters are all breathless, "this is a very rare phenomenon." Really? I see it a hundred times every winter. All you have to do is go outside and look up. And people just don't do that. And the good news is you can get people to do that! I write about this all the time. I'll talk about the space station passing overhead or as we're recording this there's the Moon and Venus and Jupiter have been passing each other and there's going to be a gorgeous conjunction Venus and Jupiter in a little while where they're going to be very close in the sky. And I expect to see lots of reports of people flipping out because of this. And it's amazing because Venus is really bright and if you go out after sunset you can't miss it and yet, you know, I say that and, of course, you can miss it because people do. If people just went out and looked at the stars more, looked at the sky more, I think a lot of these misconceptions would go away. That's one benefit and

the other benefit is that they would see just how amazing and beautiful this stuff is. It's shocking of you go out to a dark site and see Orion in the dark sky for the first time, it's gorgeous. And it would help people appreciate the world around them and see the beauty that's in it and that's the best thing I can hope for.

Maggie: Stay tuned for the fourth and final part of our interview with Phil, where we talk about how being wrong isn't always a bad thing. You can find our blog at universe.nasa.gov/Blueshift where we'll have more information about this podcast, as well as our previous podcasts and blogs. You can also find us on Twitter and Facebook as NASABlueshift (all one word). Let us know what you'd like to hear about there, or through our website feedback form!

I'm Maggie Masetti, bringing the Universe closer to you with Blueshift.

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